

7th.—Heavy rain, thunder, and hail storms were reported in Tennessee.

10th.—Destructive hailstorms were reported in central and northeastern Texas.

12-13th.—A heavy wind and snow storm prevailed over Iowa and Dakota.

13th.—A thunderstorm, with heavy rain and hail, moved northeast over Palestine, Tex., in the afternoon. A thunderstorm from the west visited Shreveport, La., in the afternoon; heavy rainfall flooded streets, and some hail fell. Heavy wind, rain, and snow storms prevailed in the West and Northwest.

14th.—Heavy thunder and hail storms occurred from Georgia to Virginia, and rain changing to snow was reported in New Jersey and New York. In Dinwiddie county, Va., a house was blown down and one person killed. Several buildings were destroyed by high wind in Princess Anne county, Va. High wind prevailed on the north Pacific coast. At Fort Canby, Wash., a velocity of 82 miles per hour from the south was reached. At Chicago, Ill., the wind attained a velocity of 65 miles per hour from the north.

17th.—Severe thunder and hail storms occurred in Arkansas and western Missouri. Heavy snow fell in extreme western Nebraska from the 17th to 20th.

18th.—Heavy snow fell in eastern Colorado during the 18th and 19th. Severe thunder, rain, and hail storms occurred on the 18th from northeast Texas to Illinois. At Saint Francis, Ark., a hailstorm lasting 5 minutes occurred in the evening, killing some stock. The hailstones were unusually large, and what appeared rotten wood was found in the center of some of the stones. Remarkably large hailstones also fell at Boyds-ville and Rector, Ark. At Olney, Ill., a house was struck by lightning.

19th.—Severe thunderstorms occurred in Texas, Kansas, Oklahoma Territory, Tennessee, and Georgia. At Wichita, Kans., the City Building was struck by lightning and damaged. A thunderstorm, with high wind, damaged crops about Oklahoma City, Okla. Poultry was killed by hail at Atlanta, Ga.

20th.—Very heavy rain fell in Louisiana, Arkansas, and southern Mississippi. Destructive local storms occurred in Kansas, Arkansas, Louisiana, and Texas. A tornado visited the southern parts of Prairie and Lonoke counties, Ark., in the afternoon, causing great damage to buildings and other property and injuring several persons. Thunder, wind, and hail storms were destructive to property in Upshur, Gregg, and Hunt counties, Tex. A tornado was reported about 9 a. m. in Caddo parish, 12 miles south of Shreveport, La. The storm

crossed the Red River into Bossier parish, destroying buildings, etc., in a path about 400 yards in width. Heavy rain in southern Mississippi seriously interfered with railroad traffic.

21st.—Heavy rain and local storms occurred in southern Louisiana and on the middle Gulf coast. At New Orleans, La., the river front and the parks were flooded to a depth of 3 to 36 inches, and traffic was suspended in the morning. One man was struck and several persons were shocked by lightning. Lightning struck and set fire to the building of the Louisiana Jockey Club; a cotton shed was also struck by lightning. At Abbeville, La., lightning struck in 4 places, and 2 persons were killed by lightning.

24th.—High wind prevailed on the north Pacific coast. A wind, snow, sleet, and rain storm prevailed in the mountains near Carson City, Nev., the wind reaching a velocity of 47 miles per hour in the evening. Heavy rain and thunder storms occurred in Louisiana.

26-27th.—High winds and heavy snow prevailed over Nebraska and the Dakotas, causing loss of young cattle.

27th.—A severe storm prevailed from the Dakotas to Michigan. A thunderstorm of exceptional intensity occurred at Huron, S. Dak., in the early morning. At Duluth, Minn., a heavy thunder and rain storm occurred in the early morning. In the afternoon the wind shifted to southwest, and the ice in the lake began to break up. At Marquette, Mich., ice forced into the harbor by heavy southeast wind interfered with the movement of vessels. During a thunderstorm at Grand Haven, Mich., several houses were struck by lightning. At Saint Vincent, Minn., the pressure decreased rapidly until 4 p. m., and rain changed to snow at 3.45 p. m. In the afternoon the wind backed from northeast to northwest, and in the early morning of the 28th reached a velocity of 65 miles per hour from the northwest, damaging the Great Northern depot. At Fairmount, Ill., a house was struck by lightning.

28th.—An exceptionally heavy rainstorm occurred in the afternoon at Healdton, Ind. T., 5.97 inches of rain falling in 3 hours, damaging crops, etc. At Atlantic City, N. J., the wind veered from south and southwest to northwest and increased in strength; a small sidewheel steamer, in tow by a tug, sank near that station. From the 28th to 30th high winds and snow prevailed at intervals at Sault de Ste. Marie, Mich., detaining and damaging vessels.

30th.—A heavy thunder and rain storm occurred at Crete, Nebr.; 3.82 inches of rain fell in 3 hours and 25 minutes, flooding the lower parts of the town. At Waluut, Ill., a thunderstorm, with heavy rain, occurred in the afternoon; one mile south of that place 3 horses were killed by lightning.

INLAND NAVIGATION.

FLOODS.

In the early part of the month the smaller streams in Illinois, Missouri, and Tennessee rose rapidly and caused considerable damage of a minor nature. On the 4th and 5th the Hudson River was very high at Albany, N. Y., and piers and railroad tracks were submerged. The Mohawk, Genesee, and Black rivers in New York, and streams in Vermont, were very high. From the 6th to 8th the Tennessee River rose rapidly at Knoxville, Tenn. On the 7th rivers and streams in northern Mississippi overflowed their banks, doing much damage to plantations. At Grenada, Miss., the Yallahusha River was reported the highest ever known. At Chattanooga, Tenn., the Tennessee River rose rapidly on the 6th, with drift, and in northern Alabama railroad tracks were flooded; 7th, river rose to 21.8 feet at Chattanooga, a rise of 13.3 feet in 24 hours; 8th, river continued rising and reached 31.6 feet at Chattanooga, and on the 9th became stationary at 5 p. m., after which it subsided.

On the 9th high water in streams in northern Mississippi damaged railroads. Much damage was caused by flood in Alabama. The Coosa River overflowed, inundating large

areas. High water in the Tombigbee River and tributaries submerged farm lands, drowning about 100 persons, and carrying away live stock in east-central Mississippi. On the 13th the Tombigbee River rose very rapidly at Demopolis, Ala., flooding railroads, carrying away bridges, etc. On the 10th the Red River of the North reached a stage 30 feet above low-water mark at Saint Vincent, Minn., overflowing its banks. High water in the Illinois River flooded large tracts of farm land about Beardstown, Ill. Streams in Arkansas were rising rapidly.

On the 6th the Mississippi River reached the danger-line, 40 feet, at Cairo, Ill.; on the 11th it reached 45.8 feet, and then fell steadily to 43.9 feet on the 20th, when it began to rise, and reached 48.3 feet on the 28th; it remained nearly stationary until the 30th, and then fell slowly. At Memphis, Tenn., the river passed the danger-line, 33 feet, on the 14th; rose slowly to 34.3 feet on the 22d; fell to 34.2 feet on the 23d and to 34.1 feet on the 26th; and rose to 34.5 feet, 1.5 foot above the danger-line, on the 30th. At Vicksburg, Miss., the river passed the danger-line, 41 feet, on the 14th, and rose

steadily to 47.2 feet at the close of the month. At New Orleans, La., the river reached the danger-line, 13 feet, on the 5th; fell to 12.8 feet on the 7th; rose to 15.5 feet on the 22d; fell to 15.4 feet on the 23d; rose to 15.9 feet on the 25th; fell to 15.8 feet on the 26th; and rose to 16 feet on the 28th to 30th.

At the close of the month the Mississippi River was above the danger-line from Cairo to the Gulf. It was falling slowly at Cairo and rising slowly from Memphis southward. The important levees of the lower Mississippi were holding firm, the only important crevasse reported having occurred at La Blanches on the Bayou La Fourche. At that place a schoolhouse was swept away and a number of children narrowly escaped drowning.

ICE IN LAKES AND RIVERS AND OPENING OF NAVIGATION.

A report from Laconia, N. H., stated that Lakes Winipeg and Winnesquam were clear of ice on the 12th, and that the break up of ice this season was the earliest in 20 years. Lake Champlain was clear of ice at Burlington, Vt., on the 7th. Navigation was opened at Oswego, N. Y., on the 5th, and Lake Ontario was reported clear of ice. Navigation opened at Buffalo, N. Y., on the 7th, at Erie, Pa., on the 3d, and at Sandusky, Ohio, on the 11th. The first boat of the season cleared from Alpena, Mich., on the 6th, and the first arrival of the season was reported on the 10th. The first boat of the season from Detroit arrived at Port Huron, Mich., on the 2d, and a steamer cleared for Lake Huron ports. The first boat of the season from Alpena arrived at Port Huron, Mich., on the 7th.

Reports from Sault de Ste. Marie, Mich., state that on the 3d the ice was rapidly disappearing from the Saint Marys River and that the channel was open; 5th to 8th, heavy floating ice in the river; 11th, ferryboats began making regular trips; 15th, floating ice in river, and an ice gorge reported at Point Iroquois; 16th to 19th, heavy floating ice in river; 22d, steamers arrived from Duluth, Minn.; 24th, ice formed, and boats detained by floating ice; 25th, ice gorge from Point Iroquois to Waiski Bay detained boats; 30th, ice gorge at Point Iroquois broke, and river full of heavy floating ice.

The first boat of the season from Chicago to Buffalo passed Detroit, Mich., on the 11th. At Duluth, Minn., navigation was reported opened on the 20th, and on the 22d four vessels, the first of the season, arrived. Navigation was opened at Marquette, Mich., on the 21st. Ice passed out of Lake Winnebago, Wis., on the 1st. The first boats of the season from Buffalo, N. Y., arrived at Milwaukee, Wis., on the 15th. Navigation was opened on Lake Michigan at Chicago, Ill., on the 4th. Navigation was opened at Green Bay, Wis., on the 11th.

Ice broke up in the Penobscot River from Bangor to the sea on the 4th. Navigation on the lower Hudson River was open on the 4th. Navigation opened on the Susquehanna River at Wilkes Barre, Pa., on the 1st.

Mississippi River.—Lake Pepin was clear of ice on the 3d. The first boat of the season for up river ports passed Red Wing, Minn., on the 7th, opening navigation at an unusually early date. The first boat of the season from Saint Louis, Mo., arrived at Saint Paul, Minn., on the 21st.

Missouri River.—On the 1st ice was moving slowly at Fort Buford, N. Dak., and on the 2d the river was gorged with ice below that point. At Pierre, S. Dak., large quantities of ice began running on the 5th. On the 29th navigation was opened by the arrival of a steamer from up the river. The first boat of the season from Saint Louis, Mo., arrived at Kansas City, Mo., on the 2d.

STAGE OF WATER IN RIVERS.

In the following table are shown the danger-points at the various river stations; the highest and lowest stages for the month, with the dates of occurrence, and the monthly ranges:

Heights of rivers above low-water mark, April, 1892 (in feet and tenths).

| Stations. | Danger-point on gauge. | Highest water. | | Lowest water. | | Monthly range. |
|---------------------------|------------------------|----------------|---------|---------------|---------|----------------|
| | | Date. | Height. | Date. | Height. | |
| <i>Red River.</i> | | | | | | |
| Shreveport, La. | 29.9 | 21 | 20.3 | 1 | 16.3 | 4.0 |
| <i>Arkansas River.</i> | | | | | | |
| Fort Smith, Ark. | 22.0 | 8 | 16.1 | 21 | 5.8 | 10.3 |
| Little Rock, Ark. | 23.0 | 9, 10 | 20.0 | 20 | 8.7 | 11.3 |
| <i>Missouri River.</i> | | | | | | |
| Fort Buford, N. Dak. * .. | | 23, 28 | 6.8 | 19 | 5.4 | 1.4 |
| Pierre, S. Dak. | 14.0 | 8 | 4.4 | 26, 28 | 1.3 | 3.1 |
| Sioux City, Iowa | 18.7 | 11 | 10.7 | 23 | 7.9 | 2.8 |
| Omaha, Nebr. | 18.0 | 12 | 10.6 | 26 | 8.5 | 2.1 |
| Kansas City, Mo. | 21.0 | 15 | 15.5 | 30 | 12.8 | 2.7 |
| <i>Mississippi River.</i> | | | | | | |
| Saint Paul, Minn. | 14.0 | 3, 4 | 5.7 | 25 | 3.1 | 2.6 |
| La Crosse, Wis. | 11.8 | 11, 12 | 7.3 | 1 | 3.1 | 4.2 |
| Dubuque, Iowa | 16.0 | 18 | 10.5 | 1, 2 | 4.9 | 5.6 |
| Davenport, Iowa | 15.0 | 19, 20, 21 | 7.4 | 1 | 3.5 | 3.9 |
| Keokuk, Iowa | 14.0 | 22 | 9.7 | 2 | 4.8 | 4.9 |
| Hannibal, Mo. | 17.0 | 6 | 12.6 | 3 | 6.3 | 6.3 |
| Saint Louis, Mo. | 30.0 | 7, 8 | 26.8 | 1 | 17.4 | 9.4 |
| Cairo, Ill. | 40.0 | 28 | 48.3 | 1 | 33.9 | 14.4 |
| Memphis, Tenn. | 33.0 | 30 | 34.5 | 1 | 24.3 | 10.2 |
| Vicksburg, Miss. | 41.0 | 30 | 47.2 | 1 | 32.9 | 14.3 |
| New Orleans, La. | 13.0 | 28, 29, 30 | 16.0 | 1 | 11.7 | 4.3 |
| <i>Ohio River.</i> | | | | | | |
| Parkersburg, W. Va. | 38.0 | 7 | 17.6 | 30 | 8.4 | 9.2 |
| Cincinnati, Ohio | 45.0 | 25 | 43.8 | 18 | 20.5 | 23.3 |
| Louisville, Ky. | 24.0 | 23 | 22.1 | 18 | 9.3 | 12.8 |
| <i>Cumberland River.</i> | | | | | | |
| Nashville, Tenn. | 40.0 | 26 | 38.8 | 18 | 12.8 | 26.0 |
| <i>Tennessee River.</i> | | | | | | |
| Chattanooga, Tenn. | 33.0 | 10 | 34.3 | 5 | 6.5 | 27.8 |
| Knoxville, Tenn. | 29.0 | | | | | |
| <i>Monongahela River.</i> | | | | | | |
| Pittsburg, Pa. | 29.0 | 24 | 12.5 | 30 | 4.0 | 8.5 |
| <i>Savannah River.</i> | | | | | | |
| Augusta, Ga. | 32.0 | 9 | 25.5 | 30 | 8.6 | 16.9 |
| <i>Willamette River.</i> | | | | | | |
| Portland, Oregon | 15.0 | 28, 29 | 7.5 | 5 | 5.0 | 2.5 |
| <i>Susquehanna River.</i> | | | | | | |
| Harrisburg, Pa. | 17.0 | 6 | 14.8 | 30 | 3.2 | 11.6 |
| <i>Alabama River.</i> | | | | | | |
| Montgomery, Ala. | 48.0 | 11 | 39.9 | 30 | 7.0 | 32.9 |

* For 15 days.

ATMOSPHERIC ELECTRICITY.

THUNDERSTORMS.

Description of the more severe thunderstorms reported for the month is given under "Local storms."

Thunderstorms were reported as follows: East of the Rocky Mountains they were reported in the greatest number of states, 23, on the 4th; in 20 on the 3d and 20th; in 15 to 19 on the 1st, 5th, 13th, 14th, 18th, 19th, 22d, 27th, and 28th; in 10 to 14 on the 2d, 6th, 7th, 17th, 21st, 23d to 26th, 29th, and 30th; in 5 to 9 on the 10th, 12th, 15th, and 16th; and in 4 on the 8th, 9th, and 11th. There was no date for which thunderstorms were not reported east of the Rocky Mountains.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 25, in Kansas; on 21 in Illinois; on 15 to 20 in Arkansas, Iowa, Louisiana, Mississippi, Missouri, Nebraska, South Dakota, Tennessee, and Texas; on

10 to 14 in Alabama, Georgia, Indiana, Kentucky, Michigan, New York, North Carolina, Ohio, Oklahoma Territory, South Carolina, and Virginia; on 5 to 9 in Florida, Indian Territory, Maryland, Minnesota, Montana, North Dakota, Pennsylvania, West Virginia, and Wisconsin; and on 1 to 4 in Connecticut, District of Columbia, Massachusetts, New Jersey, and Vermont.

West of the Rocky Mountains thunderstorms were reported in California on the 2d, 11th, 14th, 16th, and 30th; in Colorado on the 3d, 4th, 7th, 9th to 12th, 14th, 17th, 18th, 19th, 21st, 23d, 24th, and 25th; in Nevada on the 6th and 22d; in New Mexico on the 19th and 20th; in Oregon on the 29th; in Utah on the 15th, 16th, 18th, 22d, 23d, and 24th; in Washington on the 5th, 17th, and 29th; and in Wyoming on the 16th, 17th, 25th, and 26th. In states and territories other than those named no thunderstorms were reported.